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spider crabs (*Libinia emarginata* and *L. dubia*).

Herbert E. Walter, A.M., assistant in comparative anatomy, Harvard University: (1) Reactions of a triclad worm (*Bdelloura candida*) to light; (2) statistical study of the variability of the gastropod *Urosalpinx cinerea* from various points in the vicinity of Woods Hole.

FRANCIS B. SUMNER.

CONVENTION OF THE ASSOCIATION OF
AMERICAN AGRICULTURAL COLLEGES
AND EXPERIMENT STATIONS.

THE association met at Washington for its nineteenth annual convention, November 14-16, 1905. Being preceded and followed by a number of other conventions, among which were those of the Associations of State Universities, of Farmers' Institute Workers, of Horticultural Inspectors and of Official Agricultural Chemists, an unusually large number of persons interested in industrial education and agricultural experimentation was brought together in Washington, and this tended to make the convention of agricultural colleges and experiment stations one of the largest ever held. The association was addressed by the Hon. James Wilson, secretary of agriculture, who declared his deep interest in the work carried on by the institutions represented in the association, and indorsed the movement to secure an increase in the appropriation for the experiment stations, to which he pledged his support.

The annual address of the president of the association, delivered by Dr. E. B. Voorhees, director of the New Jersey experiment stations, related in the main to some of the duties and responsibilities of the agricultural colleges and experiment stations. Dr. Voorhees held the colleges primarily responsible for the character of work done by the experiment stations, because the working staff is the first deter-

mining factor in station work, and the colleges must be depended on to furnish the fundamental training for this work. He urged the need of more research work on the part of the stations, and declared that the present limitations were largely due to the insufficient supply of broadly trained men competent to conduct highly scientific investigations in agriculture.

A memorial address upon the life and services of President Henry H. Goodell, of the Massachusetts Agricultural College, and for many years a prominent worker in the association, was delivered by President W. E. Stone. President Goodell's death occurred last spring.

There were the usual reports of officers of the association and of standing committees. The executive committee reported that it had succeeded during the year in securing modification of the orders of the War Department with reference to military instruction in the land-grant colleges. The same committee suggested a reorganization of the standing committees of the association, which was taken up later and was one of the important actions of the association. Four standing committees were provided for, viz., (1) instruction in agriculture, (2) graduate study, (3) extension work and (4) experiment station organization and policy. The committees consist of six members each, and there is provision for a gradual rotation in the membership, the terms of only two members expiring each year.

Dr. A. C. True presented the report of the committee on indexing agricultural literature, describing the progress which has been made by the library of the Department of Agriculture in indexing scientific periodicals relating to agricultural investigations. The index is printed on cards. This undertaking has grown out of the efforts of the committee. Dr. True also presented the report of the committee on

methods of teaching agriculture, outlining the future work of the committee and mentioning the proposed extension of the studies in matters relating to agricultural education in the Office of Experiment Stations, an appropriation for which has been recommended to congress.

The committee on graduate study reported, through Professor L. H. Bailey, that arrangements had been made for holding the second session of the school of graduate study at the University of Illinois during the coming summer. The association took more definite action in fixing the relations of this school, adopting it as a regular part of its work and assuming responsibility for its maintenance and success. Contributions from the various agricultural colleges have been pledged toward the support of the school.

There was considerable discussion of the bills before the last congress providing increased endowment for the agricultural experiment stations and for the establishment of mining schools, and the association instructed its executive committee to lend its aid toward securing the passage of these bills, and especially that providing additional funds for the experiment stations. The committee was also instructed to secure if possible the establishment of a department of agricultural education in the National Educational Association.

SECTION ON COLLEGE WORK AND ADMINISTRATION.

The general theme for discussion before this section was 'The Field and Functions of the Land-Grant Colleges,' which was considered under the heads—curriculum, discipline and environment. The program included papers upon 'A Minimum General Culture Requirement,' by President A. B. Storms; 'Relative Amounts of Pure and Applied Science,' by President J. M. Hamilton; 'Courses in Agriculture, Horti-

culture and Allied Subjects,' by Professor F. W. Rane; "What is a 'Liberal and Practical Education' for an Engineer?" by Dr. H. W. Tyler; 'A Degree Course in Home Economics,' by President W. E. Stone; 'What Ought a Degree Course in Home Economics to Include?' by President J. L. Snyder; 'Student Control,' by President W. O. Thompson; and the relations of the land-grant colleges to—(1) the state universities, by President W. J. Kerr, (2) the normal schools, by President K. C. Babcock, (3) the public schools, by Dr. A. C. True, and (4) the farmers, by Professor John Hamilton.

Throughout the discussion in this section there was apparent unanimity of opinion that the land-grant colleges should offer courses equal in educational value to those of other institutions granting degrees, that industrial subjects properly taught have a high educational value, and that the college courses should not be narrow or severely technical. There was also recognition of the fact that the function of the land-grant college includes more than the conducting of degree courses. These colleges should lend their aid, through cooperation with other established institutions and in other ways, to the establishment and development of efficient secondary and elementary courses in agriculture and the mechanic arts in the public schools or in special schools, supplementing their four-year courses with short courses and other forms of extension work until the work of the secondary and elementary schools is well established. They should also continue, so far as their resources will allow, the extension work intended to reach adult farmers and others unable to attend school.

SECTION ON EXPERIMENT STATION WORK.

There were two main themes considered by this section—a series of papers upon 'Soil Investigations,' and a general discussion upon the subject 'How Much Demon-

stration Work and What Kind should the Experiment Station undertake?' Under the first subject Dr. C. G. Hopkins presented a paper on 'Soil Fertility in Relation to Permanent Agriculture,' in which he outlined the method followed in Illinois in studying the problems of fertility and the fertilizer requirements, summarizing the results obtained and introduced into practise. Dr. A. M. Peter presented 'Some Results of an Old Method for Determining Available Plant Food in Soils,' giving the results upon virgin soil, old field soil and subsoil. He pointed out the weaknesses of the method and recommended a modified method, for which he gave a series of results. Director C. E. Thorne, in a paper on 'Soil Investigation,' pointed out the necessity of supplementing chemical analysis and pot experiments with carefully conducted field experiments, and also of giving more attention to the biological processes of the soil; and Dr. H. J. Wheeler described some of the lines of soil investigation in progress at the Rhode Island Experiment Station, making suggestions regarding profitable lines of research to be undertaken in this field.

The discussion upon the subject of demonstration work developed some difference of opinion as to the advisability of the experiment stations undertaking such work, although its usefulness was freely acknowledged. A clear distinction was drawn between experimental and demonstration work, and the general opinion was advanced that the demonstration work was more strictly an education phase which might very properly be undertaken by other agencies, leaving the stations free to confine their efforts quite largely to experimentation and research. Considerable demonstration work is now carried on by the experiment stations, and this work is a necessary supplement of the present system of investigation and dissemination.

The association received an invitation to

hold its next meeting in California, prior to or following the meeting of the National Educational Association. Considerable interest was manifested in this matter, an objection to the plan being that it might conflict with the proposed graduate school if held during July. The matter was left with the executive committee.

In the election of officers President M. H. Buckham, of Vermont, was chosen president; President C. C. Thach, of Alabama, Dr. E. H. Jenkins, of Connecticut, and Presidents J. H. Worst, of North Dakota, B. I. Wheeler, of California, and Luther Foster, of New Mexico, vice-presidents. Director J. L. Hills, of Vermont, was reelected secretary-treasurer; Dr. A. C. True, of the Department of Agriculture, bibliographer; and Dr. H. C. White, of Georgia, President J. L. Snyder, of Michigan, Dr. W. H. Jordan, of New York, Director C. F. Curtiss, of Iowa, and Director L. H. Bailey, of New York, members of the executive committee. President C. R. Van Hise, of Wisconsin, was chosen chairman, and President H. C. Price, of Ohio, secretary, of the section on college work and administration; and Director B. C. Buffum, of Wyoming, chairman, and Director M. A. Scovell, of Kentucky, secretary, of the section on experiment station work.

E. W. ALLEN.

WASHINGTON, D. C.

SCIENTIFIC BOOKS.

JORDAN'S GUIDE TO THE STUDY OF FISHES.¹

In 1880, ten years after completing his great 'Catalogue of the Fishes in the British Museum,' Guenther published his 'Introduction to the Study of Fishes,' a book of 720 pages which gives 'in a concise form an ac-

¹ Jordan, David Starr, 'A Guide to the Study of Fishes,' 2 Vols., small quarto, pp. xxvi + 624 and xxii + 599. 2 colored frontispieces and 899 illustrations. New York, Henry Holt & Co., 1905. \$12.00 net.